

# [PHASE-LOCKED LOOP HAVING PHASE DETECTOR ERROR SIGNAL RESHAPING AND METHOD THEREOF]

## Abstract of Disclosure

A phase-locked loop includes a signal reshaper connected between a phase detector and a charge pump. The signal reshaper can be controlled by a controller to reshape the phase error signal based on the difference between the frequency of an output signal, output from a low pass filter, and a target frequency. The signal reshaper outputs a reshaped or unreshaped phase error signal to the charge pump. The unreshaped phase error signal causes the phase-locked loop to lock the frequency of a feedback signal to the frequency of an input signal. The reshaped phase error signal causes the charge pump to output a charge pump signal that synchronizes the frequency of the output signal with the target frequency.